Claims

[1] A metal nanocolloidal liquid characterized by containing a dispersion medium and nanocolloidal metal particles, and containing substantially no protective colloid-forming agent.

[2] A metal nanocolloidal liquid as described in claim 1, which has a nanocolloidal metal particle concentration of 250 mass ppm or more.

[3] A metal nanocolloidal liquid as described claim 1 or 2, wherein the protective colloid-forming agent content as reduced to carbon is equivalent to a total carbon of 0 to 200 mass ppm with respect to the nanocolloidal metal particles.

[4] A metal nanocolloidal liquid as described in any of claims 1 through 3, wherein the nanocolloidal metal particles have a mean particle size of 1 to 20 nm.

[5] A metal nanocolloidal liquid as described in any of claims 1 through 4, wherein the nanocolloidal metal particles are nanocolloidal particles of at least one noble metal selected from the group consisting of platinum, ruthenium, palladium, rhodium, rhenium, osmium, and gold.

[6] A metal nanocolloidal liquid as described in any of claims 1 through 5, wherein the dispersion medium is an aqueous medium.

[7] A method for producing a metal-on-carrier, characterized by comprising causing nanocolloidal metal particles to be carried on a carrier by use of a metal

nanocolloidal liquid as recited in any of claims 1 through 6.

[8] A method for producing a metal-on-carrier as described in claim 7, wherein the carrier is an electrically conductive carrier, and the nanocolloidal metal particles are caused to be carried on the carrier through electrodeposition.

[9] A method for producing a metal-on-carrier as described in claim 8, wherein the metal nanocolloidal liquid contains a reducing agent in a molecule-based amount 0.03 to 0.25 times by mole the atom-based amount of the metal(s) constituting the nanocolloidal metal particles, and the reducing agent has been employed during production of the nanocolloidal liquid.

[10] A method for producing a metal-on-carrier as described in claim 8 or 9, wherein the electrically conductive carrier is a carrier formed of a carbon material, an electrically conductive metal oxide material, or a metallic material; or a carrier formed of a ceramic material, a non-electrically conductive metal oxide material, or an organic polymer material, and having an electrically conductive layer on the surface thereof.

[11] A method for producing a metal-on-carrier as described in any of claims 8 through 10, wherein the electrically conductive carrier has been subjected to surface treatment in advance by use of the reducing agent which has been employed during production of the metal nanocolloidal liquid.

[12] A method for producing a metal-on-carrier as

described in claim 7, wherein the dispersion medium is an aqueous medium, and the nanocolloidal metal particles are caused to be carried on the carrier through spraying.

[13] A method for producing a metal-on-carrier as described in claim 12, wherein the metal nanocolloidal liquid is concentrated in a vapor phase, and the nanocolloidal metal particles are caused to be carried on the carrier.

[14] A method for producing a metal-on-carrier as described in claim 12 or 13, wherein the carrier is heated to 50 to 90°C, and the metal nanocolloidal liquid is sprayed onto the thus-heated carrier.

[15] A method for producing a metal-on-carrier as described in any of claims 12 through 14, wherein the carrier is provided with a masking member on a surface thereof, and the metal nanocolloidal liquid is sprayed onto the carrier through the masking member.

[16] A method for producing a metal-on-carrier as described in any of claims 12 through 15, wherein the carrier is formed of a carbon material, a ceramic/metal oxide material, a metallic material, or an organic polymer material.

[17] A metal-on-carrier characterized by being produced through a production method as recited in any of claims 7 through 16.